

**What we claim is:**

1. A method for detecting power transients in a signal wavelength carried by an optical transmission medium in a band consisting of a first plurality of wavebands comprising dividing the band into a second plurality of wavebands, equal to or less than the first plurality, and detecting power transients within each of the second plurality of wavebands.
2. A method as claimed in Claim 1, wherein the number of second wavebands is less than the first plurality.
3. A method as claimed in Claim 1, wherein the second set of wavebands is unrelated to the channels in the system by wavelength alignment.
4. A method as claimed in Claim 1, wherein the second set of wavebands is unrelated to the channels in the system by waveband shape.
5. A method as claimed in Claim 1, wherein the power of each wavelength in the second plurality of wavebands is determined by detecting the power level in each second plurality of wavebands as a function of the contribution from each of the wavebands in the second plurality of wavebands to derive a plurality of simultaneous equations, equal in number to the second plurality of wavebands, and solving the plurality of simultaneous equations to determine the levels of each wavelength component of each waveband in the second plurality of wavebands.
6. An optical communications network including at least one optical transmission medium adapted to carry optical signals occupying a waveband consisting of a first plurality of wavebands; an optical waveband splitter for splitting the waveband into a second plurality of wavebands, equal to or less than the number of the second plurality of wavebands; a detector in each of the second plurality of wavebands for detecting the instantaneous power of signals in the corresponding waveband as a function of the contribution from all of the detectors in the second plurality of wavebands, whereby to derive a set of simultaneous equations; and a simultaneous equation solver for solving the set of simultaneous equations to determine the instantaneous power in each of the second plurality of wavelengths.
7. An optical communications network as claimed in Claim 6, wherein the simultaneous equation solver comprises a computer program.

8. An optical communications network as claimed in Claim 6, further comprising an optical receiver adapted to receive signals in the first plurality of wavebands; an error detector to detect errors in signal wavebands received by said receiver; and a correlator adapted to compare the instantaneous powers determined by the simultaneous equation solver with said error signals, whereby to derive information as to the event that caused the error.

9. An optical receiver adapted to receive, from an optical transmission path, wavelength division multiplexed optical signals occupying a waveband consisting of a first plurality of wavebands, the receiver comprising; an optical waveband splitter for splitting the waveband into a second plurality of wavebands, equal to or less than in number the number of the second plurality of wavebands; a detector in each of the second plurality of wavebands for detecting the instantaneous power of signals in the corresponding waveband as a function of the contribution from all of the detectors in the second plurality of wavebands, whereby to derive a set of simultaneous equations; and a simultaneous equation solver for solving the set of simultaneous equations to determine the instantaneous power in each of the second plurality of wavelengths.

10. An optical signal whose power transient has been detected by the method according to Claim 1.

11. A carrier on which is stored a program adapted to perform the method steps of claim 5.